

THE LEGISLATIVE ASSEMBLY OF  
BRITISH COLUMBIA

# YEAR 2000 PREPAREDNESS

SELECT STANDING COMMITTEE ON  
PUBLIC ACCOUNTS  
REPORT



**REPORT ON THE PREPAREDNESS  
OF THE BRITISH COLUMBIA  
GOVERNMENT IN DEALING WITH  
THE YEAR 2000 PROBLEM**

**Select Standing Committee on  
Public Accounts  
Report**







February 16, 2000

To the Honourable,  
The Legislative Assembly of  
the Province of British Columbia  
Victoria, British Columbia

Honourable Members:

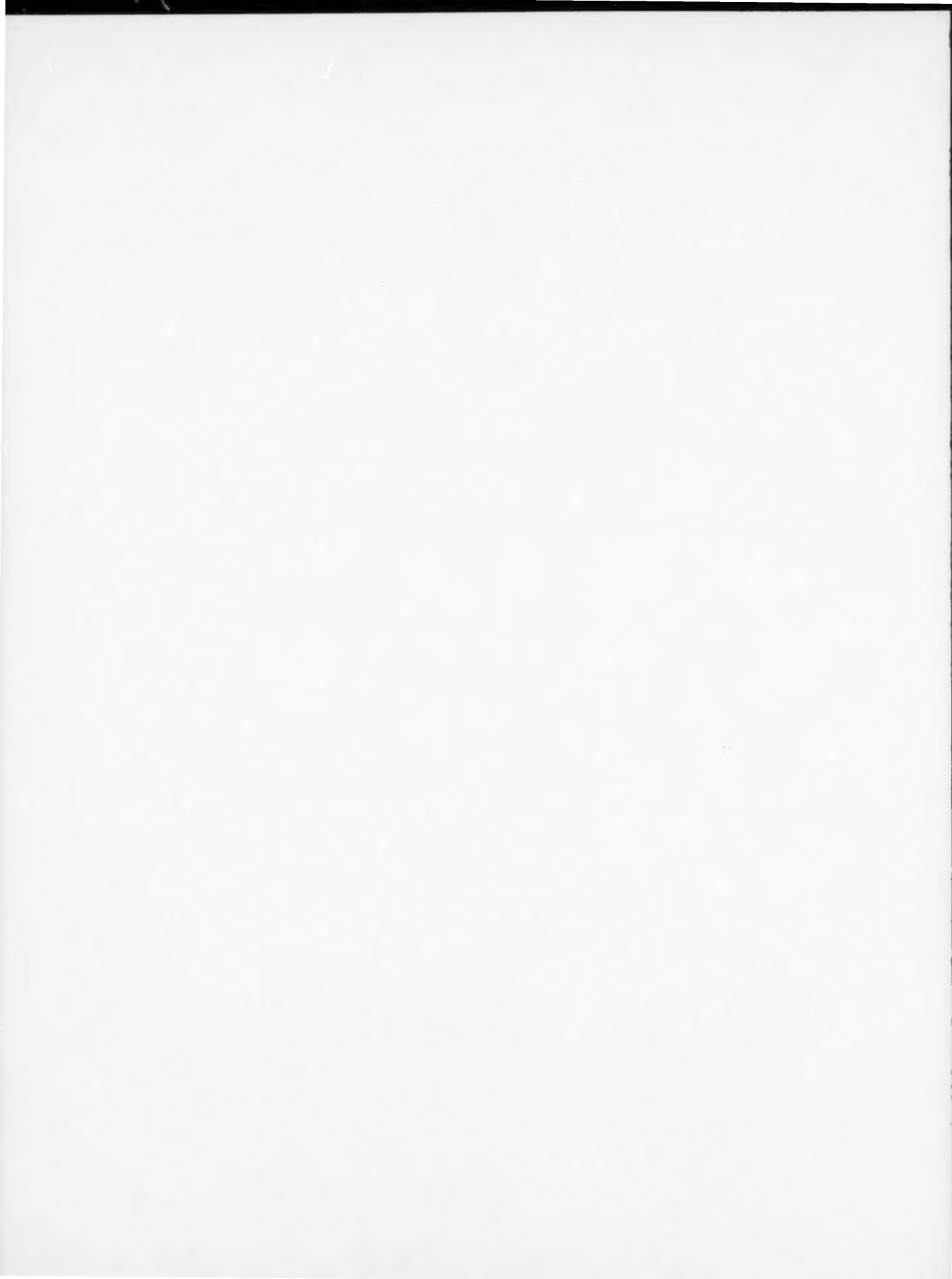
We have the honour to present the *Ninth Report* of the Select Standing Committee on Public Accounts for the Third Session of the Thirty-Sixth Parliament.

This *Ninth Report* covers work conducted by the Committee in March, July and November 1999 on the matter of "The Preparedness of the British Columbia Government in Dealing with the Year 2000 Problem".

Respectfully submitted on behalf of the Committee.

Mr. Rick Thorpe, MLA  
Chair

Ms. Evelyn Gillespie, MLA  
Deputy Chair



# Table of Contents

Composition of the Committee	1
Terms of Reference	3
Introduction	5
Action 2000	9
System Remediation – Progress Update for Mission-Critical Projects	11
Business Continuation Planning	25
Legal Liability Issues	33
Insurance Issues	37
Certification/Verification of Y2K Readiness	39
Y2K Project Costs	41
Partnerships, Coordination Efforts and Communications Initiatives	43
Other issues	45
Conclusion	47
Appendices	
I – List of Recommendations made by the Auditor General	49
II – List of Recommendations made by the Committee	51
III – Submissions	53
IV – Research Documents	55



# Composition of the Committee

## Members

Rick Thorpe, MLA	<b>Chair</b>	<i>Okanagan Penticton</i>
Evelyn Gillespie, MLA	<b>Deputy Chair</b>	<i>Comox Valley</i>
Fred Gingell, MLA (Chair to June 8, 1999)		<i>Delta South</i>
Pietro Calendino, MLA		<i>Burnaby North</i>
Hon. Moe Sihota, MLA (to June 28, 1999)		<i>Esquimalt-Metchosin</i>
Hon. Jim Doyle, MLA (to November 2, 1999)		<i>Columbia River-Revelstoke</i>
Hon. Helmut Giesbrecht (to November 2, 1999)		<i>Skeena</i>
Joy K. MacPhail, MLA (from November 2, 1999)		<i>Vancouver-Hastings</i>
Glenn Robertson, MLA (from November 2, 1999)		<i>North Island</i>
Erda Walsh, MLA (from June 28, 1999)		<i>Kootenay</i>
Rick Kasper, MLA		<i>Malahat-Juan de Fuca</i>
Steve Orcherton, MLA		<i>Victoria-Hillside</i>
Gary Farrell-Collins, MLA		<i>Vancouver-Little Mountain</i>
Murray Coell, MLA		<i>Saanich North and the Islands</i>
Dr. John Weisbeck, MLA		<i>Okanagan East</i>
Jack Weisgerber, MLA		<i>Peace River South</i>

## Clerk to the Committee

Craig James  
Clerk of Committees and Clerk Assistant

## Researcher to the Committee

Kelly Dunsdon  
Committee Researcher



# Terms of Reference

## **May 7, 1998:**

That the following reports of the Auditor General of British Columbia be referred to the Select Standing Committee on Public Accounts:

1. 1997/98 report 1: earthquake preparedness
2. 1997/98 report 2: report on the 1996/97 public accounts
3. 1997/98 report 3: a review of governance and accountability in the regionalization of health services
4. 1997/98 report 4: compliance audits
5. Special report: enhancing accountability for performance in the British Columbia public sector
6. 1996/97 report 11: follow-up of performance audits issued November 1993 to December 1995

## **July 23, 1998:**

That in addition to the powers previously conferred upon the Select Standing Committee on Public Accounts the Committee be empowered:

- (a) to appoint of their number, one or more subcommittees and to refer to such subcommittees any of the matters referred to the Committee;
- (b) to adjourn from place to place as may be convenient;
- (c) to sit during a period in which the House is adjourned and during the recess after prorogation until the next following Session;
- (d) to retain personnel to assist the Committee.

and shall report to the House as soon as possible, or following any adjournment, or at the next following Session, as the case may be; to deposit the original of its reports with the Clerk of the Legislative Assembly during a period of adjournment and upon resumption of the sittings of the House, the Chair shall present all reports to the Legislative Assembly.

**July 28, 1998:**

That reports of the Auditor General of British Columbia deposited with the Speaker of the Legislative Assembly during a period of adjournment during the Third Session of the Thirty-sixth Parliament be deemed referred to the Select Standing Committee on Public Accounts

**January 8, 1999:**

That the Public Accounts for the fiscal year ended March 31, 1998, be referred to the Select Standing Committee on Public Accounts

# Introduction

Although an exciting time for British Columbia and the world, the commencement of the new millennium has brought with it the threat of computer system failure. When systems were originally programmed, only the last two digits of the year were used, such as "69" for 1969. As a result, there has been widespread concern that the Year 2000 will be read as 1900, and that this will cause a breakdown of service delivery in areas including, but certainly not limited to, utilities, dispatch of emergency responders and health care delivery. Moreover, due to the interdependence of computer networks, it has been recognized that failures of one or a few systems could have serious consequences on an international basis.

According to the Gartner Group, an internationally-recognized information technology research firm, Canada has been a leader in Year 2000 preparedness since Y2K projects were commenced around the world.

## The Work of the Auditor General

Since 1997, the Auditor General of British Columbia has been reporting on the progress made in identifying and correcting Y2K problems associated with government information systems.

Between September and November 1997, the Auditor General conducted a review of "mission-critical" systems and programs in ministries (Crown corporations and government-funded agencies were not included). "Mission-critical" systems and programs are those whose failure to operate properly could result in potential risks to safety, economic security or the environment, with corresponding losses or liabilities borne by the province.

In the course of his review, the Auditor General identified processes widely considered to be "Year 2000 Best Practices". Those processes are as follows:

- ◆ Development of a project management structure
- ◆ Promotion of awareness of the Year 2000 problem
- ◆ Assessments of risk
- ◆ Adequate provision of resources
- ◆ Project planning

- ◆ Development of strategies for testing, validation and conversion
- ◆ Project monitoring
- ◆ Business continuation planning
- ◆ Certification/verification of systems as Year 2000 ready

A further review was conducted by the Auditor General from February to August of 1999, involving a survey of ministries and 75 government organizations, and a report was issued in October 1999. Given the looming deadlines and the vast number of systems existing in the provincial government, that review focused on the status of business continuation planning and certification/verification of systems as Year 2000-ready. Government organizations asked to respond to the survey included Crown corporations and public bodies such as health authorities, advanced education institutions and municipalities with mission critical systems. School districts were not surveyed by the Office of the Auditor General, but were surveyed periodically by the Ministry of Education, and the results reviewed by the Auditor General. The Auditor General also conducted a more in-depth examination of the same six specific systems which were reviewed in 1997.

It was emphasized to your committee that the survey responses were based upon self-assessment and were not audited. Therefore, the Auditor General was unable to express an opinion on the overall state of Y2K-preparedness of the provincial government. However, committee members were advised that the information received by the Auditor General was tested on a sample basis to ensure authenticity and reasonableness.

## **The Work of the Committee**

Your committee has been receiving periodic updates as the government has worked toward "Y2K-readiness". The committee's consideration of the Auditor General's 1997 Year 2000 review is considered in the committee's 1<sup>st</sup> Report of the Third Session, Thirty-Sixth Parliament, dated June 5, 1998.

In March, July and November of 1999, committee members received further Y2K project updates from representatives of the Office of the Auditor General and from representatives of the Information, Science and Technology Agency. The committee's March and July 1999 deliberations focused upon the Y2K-readiness of mission-critical systems and programs in provincial government ministries and other government organizations such as Crown corporations, health authorities, school districts, advanced education institutions and municipalities. Also considered were insurance issues, partnership and coordination efforts, public

communications initiatives, readiness in the financial and utilities sectors, and the impact of Y2K failures in the context of British Columbia's international trading relationships. Work conducted by the committee in early November, 1999, with less than 60 days left until the millennial change, focused particular attention on business continuation planning, legal liability assessment, and project costs.



# Action 2000

Since 1996, the provincial government in British Columbia has been working on the Y2K issue as it affects government systems. While each ministry has been responsible for fixing its own systems and any equipment that may contain date-sensitive embedded systems, the Information, Science and Technology Agency ("ISTA"), a branch of the Ministry of Advanced Education, Training and Technology, has retained primary responsibility for coordinating the provincial government's Y2K-preparedness efforts. In 1996, ISTA established a Year 2000 Implementation Task Force to develop a framework for the Y2K project, and in June 1998 an "Action 2000 Project Office" was established to act as the focal point for coordination of government efforts in carrying out Y2K projects. In February 1999, British Columbia's "Y2K Action Plan" was released. The document outlined the steps the provincial government planned to take to achieve readiness for the Year 2000.

The goals of the provincial government's Action 2000 project have been to minimize the impact of Y2K upon British Columbians, inform the public and minimize the costs to taxpayers. While initially focused upon Year 2000-readiness in provincial government ministries, in late 1998 the Action 2000 office expanded the scope of its work to include surveys of Crown corporations, municipalities, school districts, and advanced education institutions.

The Action 2000 office is a temporary one, and existing structures such as the Risk Management Branch and the Provincial Emergency Program have also been used to facilitate Y2K-readiness. In addition, a Year 2000 Transition Steering Committee was established, with representation from the Ministry of Finance and Corporate Relations' Risk Management Branch, the Provincial Emergency Program, and the Action 2000 office. The committee was fundamental in the development of a Year 2000 transition plan, which included the establishment of a central communications centre which will be linked to other provincial operations centres and the federal government's "Canada Year 2000 Monitoring and Coordination Centre".

Committee members heard that the work of the Action 2000 project has been to assess the following elements of Y2K-readiness in ministries, Crown corporations, health authorities, advanced education institutions, school districts, municipalities and other government agencies:

- ◆ Inventory and assessment of computer systems;

- ◆ Remediation of systems (by retirement, replacement or renovation);
- ◆ Testing of systems and all electronic linkages;
- ◆ Development of contingency plans;
- ◆ Monitoring of suppliers' systems;
- ◆ Development of business continuation plans, should failures occur despite remediation efforts;
- ◆ Development of consequence management plans, should significant problems arise following systems failures (much like planning for emergency response in cases of natural disaster);
- ◆ Ongoing examination of how the millennium bug program is being managed.

While these factors were tested through a self-reporting survey process, with no independent verification, funds were provided to core ministries through ISTA to have mission-critical systems reviewed by independent consulting firms. Apart from the system-specific reviews done by the Auditor General's office, 18 such independent reviews were conducted. In addition, the Ministry of Health sponsored independent reviews of 12 health authorities.

# System Remediation – Progress Update for Mission-Critical Projects

As part of his 1999 review, the Auditor General conducted surveys of core ministries, as well as 75 government organizations. The surveys revealed that, while most ministries had corrected and tested their important systems, some other government organizations had yet to make their main business functions ready for the Year 2000.

## Ministries

Your committee was informed that 67 ministry systems were identified as "mission-critical". A deadline was set requiring all mission-critical systems to be ready by September 30, 1999.

As well, 520 of the systems assessed and inventoried were identified as "business priority projects", meaning that while the proper functioning of these systems is not as important as mission-critical projects, their failure could jeopardize major business functions within ministries. In these areas, a Y2K-ready deadline of December 31, 1999 was set. Your committee notes that all business-priority projects were Y2K-ready prior to December 31, 1999.

Your committee heard that a risk assessment of provincial government ministries conducted by the Action 2000 task force in February 1999 revealed a low aggregate risk, and good Y2K management. However, risk factors were identified in some ministries, as follows:

- ◆ Project slippage (failure to meet readiness deadlines);
- ◆ Inadequate assessment of legal liability;
- ◆ Insufficient attention paid to supply chain issues;
- ◆ Inadequate scheduling for testing of plans.

The Chief Information Officer for the province advised the committee that various actions were taken to respond to these concerns. For example, the Deputy Minister to the Premier requested and received reports from each ministry regarding action being taken to address the identified risks. As well, monthly reporting to the deputy ministers' council, cabinet and the public (via the Action 2000 office Internet web site, [www.action2000.gov.bc.ca](http://www.action2000.gov.bc.ca)) was initiated.

When your committee received an update on the Y2K project in July 1999, members heard that the government's target of having 97% of ministry mission-critical computer systems Y2K-ready by June 30, 1999 was met, and moreover that the Ministry of Finance and Corporate Relations' financial systems were Y2K-compliant by April 1, 1999, in time for the commencement of the new fiscal year 1999/2000. However, your committee was informed that a few areas were slightly behind the deadline. For example, the Ministry of Health's Pharmacare and PharmaNet systems, which link community pharmacies, hospital emergency departments and physicians' offices to a centralized database, and interact with pharmacies to pay contributions for eligible prescription drugs and designated medical supplies, were not Y2K-ready by June 30, 1999 as originally scheduled. Your committee has since learned that the Pharmacare system was Y2K-ready in July 1999, and the last pharmacy was upgraded with Y2K-ready PharmaNet software in December 1999.

A further update given to committee members in early November 1999 was reassuring. Your committee was pleased to hear that the provincial government met its target to have 100 percent of ministry mission-critical systems Y2K-ready by the end of September 1999. This included mission-critical projects which, although not identified in ISTA's original list of mission-critical systems, were included in responses to the Auditor General's 1999 survey [the Ministry for Children and Families (medical devices and building systems), Ministry of Forests (Harvest Database system), and Ministry of Transportation and Highways (Coquihalla Management Information/Point of Sale systems)]. In particular, your committee was pleased to find that staff of the Ministry for Children and Families were proactive in verifying the Y2K-readiness of medical devices distributed through the ministry, and that appropriate contingency plans were in place in the event of any problems arising.

## **Case Studies of 6 Specific Ministry Systems**

Since 1997, the Office of the Auditor General has been conducting in-depth reviews of 6 specific ministry systems. A further review of these systems was done in 1999.

### **1. The Corporate Accounting System ("CAS")**

CAS is the provincial government's primary accounting, reporting and financial management system, and is administered by the CAS Office of the Ministry of Finance and Corporate Relations. There are three components to the CAS - the CAS generic interface, the Oracle software and the Walker software. Your committee was pleased to hear that senior management of the CAS Office formally signed-off the system as Year 2000-ready in February 1999, well in advance of the start of the government's fiscal period 1999/2000.

### **2. The Corporate Human Resource Information and Payroll System ("CHIPS")**

CHIPS, administered by the Public Service Employee Relations Commission ("PSERC"), processes payroll, tracks leave entitlements and maintains human resources information for provincial government employees. Representatives of the Auditor General's office advised your committee PSERC was able to provide certification in mid-September 1999 that hardware, software, data and interfaces were Year 2000-ready.

### **3. Social Service Tax System**

The Social Service Tax System aids the Consumer Tax Branch of the Revenue Division of Ministry of Finance and Corporate Relations in administering and enforcing the *Social Service Tax Act R.S.B.C. 1996, c.431*. Testing of the consumer tax applications of the system was done in April and May of 1999. Those tests revealed the applications to be Y2K-ready, and shortly thereafter test coordinators and senior management signed off these systems as Y2K-ready.

#### **4. Harvest Database System**

Representatives of the Auditor General's office told your committee that the Harvest Database System was not Y2K-ready at the time of its review in August 1999, but was scheduled to be ready by September 30, 1999. Furthermore, the Auditor General's

report states that the library management system used by the ministry to control movement of code and to track software changes was not Y2K-ready at the time of the review. As such, the Auditor General recommended that if this system cannot be ready in time for the turn of the millennium, that the ministry consider other options for code movement and tracking.

The Office of the Auditor General recommends that:

*If the library management system cannot be Year 2000 ready in time, management consider other options for code movement and tracking*

Representatives of ISTA advised that the library management system is not actually part of the Harvest Database System, but rather is a tool used by systems staff to track changes to the system. Although it is not required to be Y2K-ready, it has been determined that the system will meet the Year 2000 with no necessary changes to its code.

#### **5. Medical Services Plan Claims System ("MSP")**

The MSP claims system, administered by the Medical Services Commission of British Columbia, is made up of 47 applications which ensure that health care providers for most of the medical services provided to British Columbians are paid. The Auditor General's report notes that, as of August 1999, 40 of these applications were considered to be Year 2000-ready, 2 had been retired, 3 were in the testing stage, and 2 were in the conversion stage. The MSP system was Year 2000-ready and signed off as such by senior management by September 30, 1999.

#### **6. B.C. Benefits Program System**

The B.C. Benefits Program system aids the Ministry of Social Development and Economic Security in making payments to individuals and families, including payments made pursuant to B.C. Benefits Act legislation. Your committee was informed that the B.C. Benefits Program system was Year 2000-ready by June of 1998, and shortly thereafter all relevant documentation was formally signed off by the appropriate individuals. In fact, the Year 2000-ready system was operating for over a year prior to the commencement of the new millennium. Moreover, a Project Management Office was set up to oversee transition to the new system, establish a security procedure to ensure no unauthorized or undocumented

changes were made to the application after its verification as Y2K-ready, and monitor the system and outside interfaces.

## Government Organizations

Due to an expansion in the scope of the Action 2000 office's work in September and December 1998, government organizations (including Crown corporations, advanced education institutions, school districts and health authorities) were included in assessments of Y2K-readiness. The Auditor General reviewed the Y2K-readiness of government organizations in 1999. However, his August 1999 survey showed disappointing results. The survey results indicated that:

- ◆ 43% of all organizations considered their mission-critical systems to be Y2K-ready
- ◆ 50% considered their critical embedded systems Y2K-ready
- ◆ 50% had completed business continuation planning
- ◆ 43% had determined the extent of their potential legal liabilities in the event mission-critical system failure

However, in early November 1999 committee members were pleased to hear that significant progress was made by most government organizations since the August 1999 survey was conducted. Details of that progress are discussed below in this report from pages 16 to 24.

## Crown Corporations

While the Crown Corporations Secretariat ("CCS") has been responsible for coordinating the Y2K-readiness of the Crown corporations within its purview, the Action 2000 office has been monitoring the progress of these corporations. Mission-critical projects have been identified in nine Crown corporations, as follows:

- ◆ British Columbia Buildings Corporation: Information Systems, Desktop Applications, Unix and NT Server, Owned Embedded Systems, Leased Embedded Systems;

Auditor General report, page 77:

*The government delivers its services through ministries and various government entities such as Crown corporations, health care organizations and universities and colleges. Although it may not directly be involved in the daily operations of these entities, the government, through its ownership and control, has a responsibility to the public to ensure that the organizations will be Year 2000 ready.*

- ◆ British Columbia Ferry Corporation: Traffic Analysis, Payroll, PC/Point of Service, Reservations, Loading Ramp Controllers, Air/Gas Detection, Modis/Engine Monitoring, Notifier/Fire Detection, Mirans/Navigation, Dangerous Goods/DGIS, Siemens/Propulsion Control;
- ◆ British Columbia Hydro and Power Authority: Business Systems, Operational Control Devices;
- ◆ British Columbia Lottery Corporation: Electronic Bingo, Related Business Systems, Casino Systems, Lottery Systems;
- ◆ British Columbia Railway Corporation: Occupancy Control System, Revenue Management System, SAP Replacement Legacy Systems, Electronic Bill of Lading, Electronic Data Interchange Applications, Train Crew Scheduling and Monitoring, Graphic Railroad Interface, Yard Management System 2000;
- ◆ Columbia Power Corporation: Brilliant Dam Generator;
- ◆ Insurance Corporation of British Columbia: Revenue Collection, Vehicle Insurance Sales, Investment Management, Drivers Licences Issuance and Renewal, Indemnification of Accident Victims;
- ◆ Pacific National Exhibition: Network;
- ◆ Provincial Capital Commission: Unix system

When your committee received an update on Year 2000-readiness in July 1999, representatives of ISTA advised that Y2K projects in all Crown corporations reporting to the CCS were progressing well. As of June 15, 1999, 46% of Crown corporation mission-critical projects were Y2K-ready.

While initially a number of risk factors were identified, including inadequate consideration of legal liabilities and supply chain issues in some Crown corporations, the Action 2000 task force and the CCS responded with increased monitoring of Crown corporations' Y2K progress. Your committee also notes that, commencing in July 1999, the Y2K status of Crown corporations' mission-critical systems was reported monthly on the Action 2000 web site.

As a result of these efforts, substantial progress was made between June and October of 1999. As of October 15, 1999, 86% of the mission-critical systems of major Crown corporations were Y2K-ready, and most of the remaining projects were completed by the end of October, 1999 (except B.C. Ferry Corporation, B.C. Rail and B.C. Buildings Corporation, which were completed by the end of November, 1999).

During the course of its deliberations, your committee also gave particular consideration to Y2K projects in the B.C. Ferry Corporation and B.C. Hydro.

### **B.C. Ferry Corporation**

The B.C. Ferry Corporation began conducting Y2K analyses of its internal systems in 1996, and identified 11 mission-critical projects. However, as of June 30<sup>th</sup>, 1999 only two of those projects had been completed (the loading ramp controllers, and the system which handles toll sales at 23 terminal locations), and it was not until May 1999 that the corporation's Executive Management Committee formally approved the terms of reference and budget for the B.C. Ferry Corporation Year 2000 Project. This was noted in a report by Deloitte and Touche, which conducted an independent review of Y2K-readiness in the corporation's mission-critical systems from August 16 to September 3, 1999. That review indicated that, while the corporation was progressing well, there were a few areas which were not being adequately addressed. As a result, Deloitte and Touche expressed some concerns regarding the corporation's management of its Y2K project, including the following:

- ◆ Few procedures had been established to ensure that the corporation's systems did not "fall out of readiness" once the testing program is complete
- ◆ Some mission-critical systems were not to be implemented until late in the year, and therefore early assurances about the readiness of these systems were hard to attain
- ◆ Some organizational areas were brought into the project later than others, and therefore there was a need for the corporation's Year 2000 Project Office to revisit those areas to ensure that consistent levels of effort and due diligence were applied to all areas
- ◆ The corporation's Internal Audit department was not playing the key monitoring role it should have to ensure adequate due diligence
- ◆ Catamaran Ferries International Inc. had been excluded from the responsibility of the B.C. Ferry Corporation's Year 2000 Project Office, and was responsible for its own Y2K-readiness – there was a need for the corporation to revisit all sub-projects, including the CFI project, to ensure that the approaches used were consistent with those used elsewhere in the corporation
- ◆ As of the time of the review, no systems or contingency plans had been certified and signed-off by corporate managers as Y2K-ready, nor had a consistent certification process been formally defined

As a result of the audit, Deloitte and Touche made numerous recommendations to the corporation relating to Y2K project management, awareness, assessment of systems, resources, project planning, project monitoring, testing, contingency planning, certification and due diligence.

### **B.C. Hydro**

B.C. Hydro has been preparing its business systems and operational control systems for the Year 2000 since 1994. Your committee was extremely pleased to hear that B.C. Hydro has maintained its position well ahead of the industry average in Y2K preparedness, and has done an extremely thorough job of ensuring that British Columbians will be able to rely on uninterrupted delivery of electrical power at the turn of the millennium. This was an enormous undertaking, with 3,296 of the 8,018 physical devices inventoried by B.C. Hydro being identified as having a high risk of possible Y2K impact. After extensive testing, only 7% of high-risk devices were determined to require remediation, and all remediation work was completed by May 31, 1999. Moreover, your committee notes that out of 34 generating plants across British Columbia, B.C. Hydro identified 12 as using mission-critical date-sensitive computer systems to operate. As part of its Y2K project, B.C. Hydro operated these 12 plants successfully in "Year 2000 mode" for periods of two weeks throughout the summer and fall of 1999.

There was some concern expressed from within the committee about Y2K-related failures resulting from B.C. Hydro's links to the North American grid system. Committee members were pleased to hear that B.C. Hydro has the capability of cutting itself off from the grid system so that it can provide essential service exclusively to British Columbians. Moreover, much cooperation has taken place between utilities from various jurisdictions. For example, your committee notes that B.C. Hydro is part of the Western System Coordinating Council which prepared contingency plans for the integrated transmission system over the western part of North America. B.C. Hydro has also participated in the North American Electricity Reliability Council which, in late 1999, issued a report stating that B.C. Hydro is one of 187 public electric utilities (out of a total of 251 studied) which was considered by the council to be well-prepared for the Year 2000. Committee members also note that a major test of all North American grid hydro systems conducted in September 1999 was successful.

B.C. Hydro has also published a "Year 2000 Information Newsletter", which has been available to the public at Power Smart Centres and B.C. Hydro offices throughout the province.

## Health Authorities

In 1997, responsibility for the delivery of certain health care programs and management of certain programs and hospitals was delegated to 52 regional health authorities. It has therefore been the task of those health authorities to ensure that all computer systems, date-sensitive medical equipment and suppliers will be ready to go into the Year 2000 without any disruption in health care service to British Columbians.

Representatives of ISTA were able to provide your committee with information regarding the risk factors identified, and progress made, by health authorities in ensuring Y2K-compliance of hospital systems and equipment.

During his 1999 review, the Auditor General surveyed all health authorities in the province. The response rate was 80%. The survey indicated that, as of August 1999:

- ◆ 35% of respondents had completed remediation of all mission-critical systems
- ◆ 49% of respondents had completed remediation of all critical embedded systems

Your committee was also advised that a review conducted by a consulting firm in late 1998 revealed a significant risk that some health authorities would not be ready for the Year 2000. Common risk factors which were identified are as follows:

- ◆ Overall slippage of completion dates;
- ◆ Incomplete deliverables on the part of some health authorities (i.e. failure to complete certain planned items);
- ◆ Inconsistency in reporting.

As a result of these findings, the Ministry of Health assumed a more proactive role, and the following initiatives were developed:

- **Funding for Capital Projects**

In the 1999/2000 provincial budget, \$100 million was made available to health authorities for Y2K capital projects

The Office of the Auditor General recommends that:

*The Ministry of Health immediately appoint Year 2000 managers and adequate resources to assist the several remaining high-risk health authorities with becoming Year 2000 ready, developing business continuation plans and ensuring that their supply chain will be Year 2000 ready.*

The criteria for funding were based upon standards developed by the Year 2000 health authorities team, a working committee composed of Ministry of Health officials and biomedical engineering experts. Your committee also learned that there is a wealth of information regarding the Y2K status of medical equipment contained on Health Canada's "CYNCH" (Canadian Year 2000 National Clearinghouse for Health) web site;

- **Monthly Reporting**

Health authorities reported on a monthly basis to the Ministry of Health in the areas of system compliance, contingency planning and supply chain issues;

- **Risk Assessments**

Risk ratings based upon the monthly Y2K progress reports were developed by the Ministry of Health. Those risk assessments were independently reviewed by a consulting firm.

- **Escalation Plans**

Escalation plans were developed for those health authorities considered at risk. Components of these escalation plans included:

- Request from the Deputy Minister to the CEO of at-risk health authorities for immediate action on Y2K-preparedness;
- Health authorities to provide specific deliverables for detailed assessment and corrective action;
- Conduct of independent on-site reviews where health authorities have been found to be at high risk of not being ready by the end of 1999. Your committee heard that, as of November 1999, 8 such reviews were done. As a result of the reviews, 3-4 of those health authorities were determined to be at low risk, and it was anticipated that the remaining authorities would be moved to the low risk category prior to year-end;
- Placement by the Ministry of Health of Y2K managers directly into the Vancouver Hospital and Health Sciences Centre, the Nelson and Area Community Health Council and the Cranbrook Community Health Council, to put their Y2K projects back on target.

- **Public Reporting:**

Y2K progress of mission-critical systems in health authorities has been publicly reported on the Action 2000 web site since the end of July 1999. British Columbia was the first jurisdiction in Canada to make this information available on the Internet.

As a result of these efforts, progress between August and October 1999 was somewhat better. According to ministry representatives, as of the end of October 1999 49 of 59 health authorities (including 7 facilities that are technically part of already-existing health authorities, but sent in separate survey responses) had their mission-critical systems ready for the Year 2000. Of the remaining health authorities, 7 planned to have mission-critical systems ready by the end of November 1999, and 3 were aiming for achievement of readiness during the month of December 1999. Your committee also notes that, in light of concerns about communications problems at the turn of the millennium, some hospitals in the Lower Mainland and Fraser Valley have satellite phones enabling them to contact the "E-Comm Centre" (a \$24-million state-of-the-art emergency communications facility located in Vancouver), the B.C. Ambulance Service, and local government emergency staff and police.

### **School Districts**

It was emphasized that at no time has ISTA considered any school district system to be "mission-critical". However, some of the Y2K challenges for school districts have included the readiness of systems tracking students' grades, and physical plant and heating systems. Committee members were advised that school districts in British Columbia have progressed well in their Y2K-readiness, and that the Action 2000 task force has worked cooperatively with British Columbia Buildings Corporation to remedy physical plant and heating systems in British Columbia schools.

Your committee further heard that some Y2K-related risks were identified in the province's school boards. For example, committee members were advised that the business priority systems (systems necessary for efficient operation) were not completed by the June 30, 1999 target date, and that some districts' management and planning processes included insufficient detail. As well, inadequate attention was paid to legal liability issues arising in schools.

However, actions were taken to address these risks. In particular, the Deputy Minister of Education was in direct contact with all school authorities to ensure that boards and trustees were aware of their legislative responsibility to maintain

school property, including computer systems, software and equipment. As with health authorities, escalation plans with specific time frames were developed, and technical expert assistance was offered by assigning field staff from the Ministry of Education, pursuant to a provision of the *School Act*, R.S.B.C. 1996, c. 412, to work within schools to remedy Y2K problems.

When your committee met in early November of 1999, members were pleased to hear that surveys conducted by the Ministry of Education in June and October of 1999 indicated most school districts in the province were on target for Y2K-readiness. Furthermore, representatives of ISTA noted that there the risk of losing student records due to Y2K problems was minimal, because all records are centrally stored in Ministry of Education Y2K-ready systems

### **Advanced Education Institutions**

Committee members heard that, as part of his 1999 review, the Auditor General surveyed 25 advanced education institutions in the province, with the assistance of the Ministry of Advanced Education, Training and Technology. The surveys did not include the University of Victoria, University of British Columbia or Simon Fraser University, as they are all self-insuring entities.

In the spring and summer of 1999, committee members heard that progress among these institutions was generally good, and all were reporting to the Ministry of Advanced Education, Training and Technology on a quarterly basis. As such, the Action 2000 office rated them as low-risk.

A subsequent survey done by the Auditor General in August 1999 had less positive results. Your committee heard that only one of the five universities that responded were willing to supply enough detail about systems and documentation to allow the Auditor General to properly evaluate Year 2000-readiness. As well, some concern was expressed by the Auditor General regarding the fact that none of the universities that responded considered their research systems to be mission-critical, and had delegated the responsibility for ensuring Y2K-compliance to individual researchers and faculties.

In response to the concerns raised by the Auditor General, representatives of ISTA noted that a survey conducted by that office has indicated 75% of the 825 advanced education institution systems identified are ready for the Year 2000. As

**Auditor General report  
page 88:**

*Considering the extent of research done by some of these institutions, it is not clear to us whether failure of any computer-controlled research environment could be a health hazard or a life-threatening event.*

well, your committee heard that ISTA has devoted a considerable amount of time to working with those institutions to provide examples of best Y2K remediation practices. A representative of the Ministry of Advanced Education, Training and Technology also emphasized to committee members that advanced education institutions were on track to have systems Y2K-ready by the end of 1999.

### **Municipalities**

While the province has been working with municipalities to ensure that information-sharing is occurring with respect to Y2K best practices and resources, your committee notes that the province has limited legal liability as regards local government preparedness. An exception to this limited liability occurs where municipalities rely on provincial services or expertise, such as in the collection of school taxes and policing services.

Your committee was pleased to hear that the provincial 9-1-1 system is now Y2K-compliant. The national Canadian Police Information Centre ("CPIC") system, which coordinates policing activities across the country, reported its Y2K-readiness in June 1999.

Moreover, a recent Ministry of Attorney General survey of 12 municipal police forces in the province indicated that:

- 4 municipal police forces reported readiness of mission-critical computer and communications systems;
- 5 municipal police forces reported Y2K-readiness is expected by October 1999;
- 3 municipal police forces did not report back

In terms of other municipal services, a survey done by the Provincial Emergency Program in April 1999 to assess Y2K-readiness in the areas of fire protection, water purification/distribution, sewer/waste disposal and traffic lights had positive results. Although the Auditor General did not review the survey or the responses to it, your committee was advised in November 1999 that municipalities have been well aware of the Year 2000 issue and have taken appropriate steps to ensure their readiness. Municipalities have also actively worked with the Provincial Emergency Program to sponsor preparedness workshops throughout the province. As of November 1999, 10 such workshops had been conducted, involving 640 participants.

## Utilities and Telecommunications

Although the focus of your committee's work has been examination of Y2K-preparedness efforts within the government ministries, Crown corporations, health authorities and other government organizations, your committee also takes note of efforts made by the utility industry. Your committee was made aware that the British Columbia Utilities Year 2000 Forum, an organization made up of representatives from B.C. Hydro, Telus, B.C. Gas and Centra Gas, has taken an active role in coordinating Y2K-preparedness, business continuation plan exercises, and Y2K public awareness. In particular, the organization was a participant, along with the Action 2000 task force, in regional tours and workshops held throughout British Columbia. As well, an integrated test of business continuation plans was conducted by the forum on May 19, 1999. The test focused upon interdependencies and communications, and was considered to be highly successful. A similar test was held on October 7, 1999 by members of the Canadian Association of Petroleum Producers and the Canadian Gas Association.

Committee members have also learned that Telus has been preparing for the new millennium since 1996, and had the majority of critical systems remedied well in advance of December 31, 1999. On September 30<sup>th</sup> and November 24<sup>th</sup>, 1999, Telus Emergency Operations Centres were activated in order to test systems and business continuation plans. Telus has also been a participant in the Canadian Year 2000 Telecommunications Industry Forum Emergency Communications Centre, which has allowed it to access a global "Early Warning System".

By the end of June 1999, B.C. Gas had 100% of its mission-critical systems ready for transition to the Year 2000 and, like B.C. Hydro, also rolled the clocks forward to 2000 to successfully operate in "Year 2000 mode". West Kootenay Power had all 12 of its mission-critical systems Y2K-ready by September 30, 1999.

# Business Continuation Planning

Committee members were advised that an analysis done by the Gartner Group estimates that up to 9% of computer systems which have been declared Y2K-compliant may in fact not be ready for the new millennium. As such, 1999 saw work on the technical repair of mission-critical projects wind down, and the focus of the Action 2000 initiative shift to the development and refreshment of business continuation plans. While past reviews of provincial government Y2K projects have addressed project planning and management, risk assessment, public awareness, resources, testing strategies and project monitoring, the Auditor General's October 1999 report focused upon the importance of business continuation planning. For the purposes of the review, 89 mission-critical *program areas* (as opposed to mission-critical *systems*) were identified, and the Auditor General surveyed all ministries and 75 government organizations. As well, a sample of ministry mission-critical systems were selected for a more in-depth assessment of business continuation planning.

The Office of the Auditor General recommends that:

*Final business continuation plans be signed off by authorized management and the plan coordinator as evidence that the plans have been reviewed and authorized and are considered to be thorough, reasonable and capable of implementation;*

*One of the priorities of government should be to promote the completion and testing of business continuation plans within the set deadlines, as insurance against disruptions to service delivery and operations.*

## Ministries

Your committee heard that the Risk Management Branch of the Ministry of Finance and Corporate Relations has been leading the all-hazards business continuation planning initiative in the provincial government for the last 7 years.

Eleven ministries have identified 89 mission-critical program areas. Committee members were advised that in the course of his review, the Auditor General found that few early drafts of these program areas' business continuation plans were considered adequate by the Risk Management Branch. As well, as of August 1999 some plans had still not been submitted to the Risk Management Branch for evaluation. The Auditor General also found that some ministries did not have formal documentary evidence to indicate authorized management review and approval of business continuation plans. The Auditor General therefore recommended that the government should place a priority on promoting the completion and testing of business continuation plans within the set deadlines,

and that all final business continuation plans be signed off by authorized ministry management and plan coordinators.

In particular, the Auditor General's October, 1999 report notes that, as of August 1999, of 15 mission-critical projects in the Ministry of Attorney General, only one had business continuation plans completed and approved by user management. Some of the projects for which no business continuation plans had been completed and approved included systems or programs that, if failure occurred, posed a safety risk (for example, the electronic monitoring system, the protection orders system, and the risk needs assessment program.) Others, such as the Family Maintenance Enforcement Program, were significant in that their failure could cause substantial financial hardship for many British Columbians.

In response to the concerns identified in the Auditor General's October 1999 report, committee members were advised that a business continuation planning guide was developed. The guide advised that formal executive approval be obtained at the planning, plan-writing and plan review phases of Year 2000 projects. Plans were drafted according to this guide on an "all-hazards" basis, and their development was monitored and evaluated by the Risk Management Branch according to strict deadlines. Finally, key government staff were asked to report to work over the transition period to year 2000, so that business continuation plans could be activated if necessary.

A team consisting of Ministry of Finance and Corporate Relations, Provincial Emergency Program and Action 2000 staff tested business continuation plans over the summer of 1999, and aimed to have plans finalized by all ministries and submitted to the Risk Management Branch by September 30, 1999. As of early November 1999, all ministries but one (the new Ministry of Community Development, Cooperatives and Volunteers) had their business continuation plans submitted to the Risk Management Branch, and the remaining ministry had its plan submitted by mid-November, 1999.

Finally, committee members heard that the Risk Management Branch coordinated preparation of two documents to aid in business continuation planning and transition to the new millennium. A prioritized list of all ministry mission-critical and business priority program areas was drafted in order to determine overall government priorities in the event of Y2K-related failures. The draft prioritization document was presented to the Deputy Ministers' Committee on Emergency Preparedness on October 25<sup>th</sup>, 1999, and obtained committee approval in November, 1999. As well, a Draft Transition Plan for the Province of British Columbia was prepared, which was accepted by the Deputy Ministers' Committee

on Emergency Preparedness but, as planned, continued to be developed right up to the rollover period beginning December 29, 1999.

In response to concerns identified in the Auditor General's report regarding business continuation planning in the Ministry of Attorney General, committee members were pleased to hear from a representative of that ministry that as of December 22, 1999, all business continuation plans, including that of the independent firm delivering services under the Family Maintenance Enforcement Program, had been completed, tested and signed-off by management.

Furthermore, your committee learned that independent review and exercising of business continuation plans in 30 mission-critical program areas was done by a contractor. The independent exercises were completed on November 25, 1999. Early in January 7, 2000 your committee received a report from the Ministry of Finance and Corporate Relations, Risk Management Branch, indicating that the results of those tests were positive, and no serious problems were encountered. However, your committee was made aware that some structural deficiencies were identified, including the need to establish:

- A strategic context (i.e. an explanation of government/ministry priorities and objectives)
- A hierarchy of condensed plans for the timely and efficient escalation of ministry response linked to the nature and scale of the emergency
- Identification of support, coordination and reporting requirements
- Use of common terminology and framework for emergency operation centres
- Improvements to the overall structure and organization of "all hazards" plans to enhance clarity, utility and readability

As a result of the independent exercises, there are plans to incorporate the contractor's recommendations into a re-write of the all-hazards business continuation planning guide. Representatives of the Risk Management Branch have also advised that regular reviews will be conducted to ensure that new mission-critical and business-priority program areas are identified and linked with risk/recovery strategies that exist across government.

## Case Studies of Business Continuation Planning in Six Ministry Systems

Since 1997, the Office of the Auditor General has been reporting on the Year 2000 progress being made in 6 specific ministry financial systems [the Corporate Accounting System ("CAS"), Corporate Human Resource Information and Payroll System ("CHIPS"), Social Service Tax system, Harvest Database system, Medical Services Plan system and B.C. Benefits program system]. As part of his 1999 review of Y2K-preparedness in British

Columbia, the Auditor General once again examined these systems in detail to determine their business continuation planning status.

The Office of the Auditor General recommends that:

*The final business continuation plan (Harvest Database System, Ministry of Forests) be signed off by authorized management and the plan coordinator as evidence that the plan has been reviewed and authorized and is considered to be thorough, reasonable and capable of implementation*

Of the 6 systems examined, the Auditor General identified only one – the Harvest Database System - that was at risk of not having a business continuation plan completed, approved and tested by year-end. The Harvest Database System, which calculates stumpage billing and royalties earned from timber sales, is administered by the Ministry of Forests. The Auditor General's review indicated that, although a business continuation plan had been completed, steps had not been taken toward obtaining formal approval of it. When your committee met to consider this issue in early November 1999, committee members were advised that the Ministry of Forests planned to respond to the Auditor General's recommendation by initiating the formal business continuation plan approval process. Your committee has since learned that business continuation procedures for the Harvest Database system were signed off by the Director of the ministry's Revenue Branch in early December 1999. According to representatives of ISTA, those procedures form part of the ministry's business continuation plan, and it is expected that a sign-off procedure for the larger plan will be established in the near future.

The results of the Auditor General's survey also identified the business continuation planning in some other ministries as completed, but lacking in content or format (in particular, the Medical Services Plans claims system and the Pharmacare system), although the Auditor General made no recommendations in this regard. Responses from the Ministry of Health since the Auditor General's review was done indicate that steps have been taken to address deficiencies in these business continuation plans.

## **Crown Corporations and Government Organizations**

The Auditor General's 1999 review included a survey of business continuation planning in government organizations and Crown corporations. In this regard, your committee has learned that all 14 Crown corporations within the purview of the Crown Corporations Secretariat had their business continuation plans completed and signed-off by senior management prior to December 31, 1999.

As well, a more in-depth review of 5 particular organizations (B.C. Ferry Corporation, B.C. Hydro and Power Authority, B.C. Liquor Distribution Branch, Superannuation Commission and Workers' Compensation Board) was conducted. As of the time of the Auditor General's review (August 1999), only B.C. Ferry Corporation and B.C. Hydro had completed and obtained senior management approval of their business continuation plans. However, the Auditor General's report did not make any recommendations to the other three government organizations in this regard.

The Auditor General's report states that, while the Liquor Distribution Branch did have a business continuation plan in place at the time of the review, it was neither application-specific nor all-hazards. Furthermore, the Risk Management Branch had found the plan lacking in detail and improperly formatted. However, the committee does note that an updated business continuation plan addressing concerns identified by the Risk Management Branch was submitted in September 1999.

In the course of his 1999 review, the Auditor General also found that the Superannuation Commission had not yet submitted a comprehensive business continuation plan to the Risk Management Branch. The Commission responded to this concern by stating that consolidation of business continuation planning into a comprehensive plan will become a priority once the Commission's new "Integrated Pension Administration System" is implemented.

The Auditor General's report also states that business continuation planning in the Workers' Compensation Board of British Columbia had not been fully addressed at the time of the review. The Information Services department of the board had expressed the view that its Disaster Recovery Plan would be sufficient to address any Y2K-related computer problems arising at the turn of the millennium, and that its all-hazard business continuation plan was still under development. The Auditor General did not make any recommendation to the Board in this regard.

## Health Authorities

The August 1999 survey of health authorities done by the Auditor General's office indicated that only 58% of those responding had completed business continuation plans. While representatives of the Auditor General's office advised your committee that most health authorities were expected to have business continuation plans completed by the end of the year, several high-risk health authorities were also identified for which there was a high probability that such plans would not be completed by December 31, 1999. Therefore, the Auditor General recommended that the Ministry of Health appoint Year 2000 managers to provide assistance to high-risk health authorities. As discussed on page 21 of this report, Y2K managers were placed directly into the Vancouver Hospital and Health Sciences Centre, the Nelson and Area Community Health Council and the Cranbrook Community Health Council, and your committee is pleased to note that all health authorities had business continuation plans in place prior to December 31, 1999.

The Office of the Auditor General recommends that:

*The Ministry of Health immediately appoint Year 2000 managers and adequate resources to assist the several remaining high-risk health authorities with becoming Year 2000 ready, developing business continuation plans and ensuring that their supply chain will be Year 2000 ready*

In the course of its deliberations concerning business continuation planning in health authorities, the committee was also briefed on the Ministry of Health's business continuation planning efforts. These efforts included the creation of a transition plan to address potential Y2K-related failures in British Columbia's health system. From December 30, 1999 through to January 4, 2000 the ministry had a 24-hour emergency operations centre set up to monitor international developments, and respond to any problems arising within British Columbia.

## Advanced Education Institutions

The Auditor General's August 1999 survey showed disappointing progress in the area of advanced education institutions' business continuation planning. Committee members were advised that none of the universities responding to the survey described their business continuation plans as completed. Of the 2 colleges responding to the survey, one had not developed a business continuation plan at all, while the other could not provide documentation pertaining to its business continuation planning. The Auditor General did not make any recommendations to the ministry in this regard.

## **School Districts**

While the Auditor General advised that he did not survey school districts' business continuation planning as part of his 1999 review, your committee did learn that the results of surveys done by the Ministry of Education were reviewed by Office of the Auditor General staff. It was determined that all 59 school districts that responded to the ministry survey reported appropriate management of all Y2K-related issues, including business continuation planning.

## **Municipalities**

Although not surveyed by the Auditor General during his 1999 review, your committee heard that a recent Ministry of Attorney General survey of 12 municipal police forces in British revealed that municipal police forces and the RCMP were quite active in their development of business continuation and operational plans. Business continuation plans in key forces were in place by the end of September 1999.

## **RECOMMENDATION #1:**

Your committee recommends that the government continue to promote the completion, testing and ongoing improvement of all-hazards business continuation plans in ministries, Crown Corporations and government organizations, including health authorities, advanced education institutions, school districts and municipalities, to insure against future disruptions to service delivery and operations.



# Legal Liability Issues

In May 1998, the Canadian Bar Association's Working Group on the Year 2000 issued a report entitled "Countdown to Year 2000: The Legal Issues". The report outlined the legal issues associated with Year 2000 failures, including corporate governance issues, contracting for Year 2000 assessment and remediation, disclosure/communications issues, risk management, contractual rights and obligations, taxation issues, liability, dispute resolution and remedies. That report notes at page 37 that "public sector institutions, regulatory agencies and governmental departments that have duties to ensure public security, whether safety, health, financial or otherwise, could be exposed to a wide range of potential liabilities in connection with failure to discharge those duties in connection with Year 2000 problems". The report lists examples of the context in which such duties may arise, as follows:

- Infrastructure systems – including transportation systems, safety and emergency response systems, national defence, law enforcement, hazardous material management systems, telecommunications and utilities
- Government services to individual clients – including income distribution, on-line services, immigration, land registration, security registration and licensing services
- Regulatory obligations – including securities commissions, Office of the Superintendent of Financial Institutions' requirements, audits/inspections, transportation boards, nuclear regulating commissions

Committee members heard that, in British Columbia, the Legal Services Branch of the Ministry of Attorney General is responsible for providing advice with respect to these liabilities, and has identified the following potential Y2K-related claims:

- Breach of contract, arising out of government default on contractual obligations dependent on computer systems;
- Negligence actions, arising out of system failures, which in turn result in failures of equipment, premature expiration of licenses or permits, or failures of registry or other systems;
- Claims for restitution, if system failures result in the over-collection by government of taxes and fees, and;
- Copyright infringement claims, arising from the correction of software without the consent of the copyright owner.

In response to these risks, the Legal Services Branch has been performing the following functions:

- Identifying steps that may be taken to reduce the risk of potential liability
- Reviewing Year 2000-related correspondence and documents (internal and external)
- Drafting and reviewing contracts
- Monitoring Year 2000 legislation and litigation in other jurisdictions
- Communicating with provincial government ministries – in this regard, bulletins have been issued which address legal concerns arising from the Y2K computer problem.

Your committee notes that in some jurisdictions in the United States, controversial legislation has been passed exempting businesses and/or governments from liabilities for problems caused by Y2K-related equipment failures. For example, on July 21, 1999, U.S. President Bill Clinton signed the "Y2K Act", a "time-limited" piece of legislation which seeks to protect American companies working on Year 2000 solutions from lawsuits. However, no such legislation has been passed in British Columbia to date.

## Crown Corporations and Government Organizations

Representatives of the Auditor General's office advised committee members that a survey done by the Action 2000 office in October 1999 indicated some Crown corporations and government organizations had not completed legal liability assessments. In particular, the survey results revealed that:

The Office of the Auditor General recommends that:

*The Public Service Employee Relations Commission seek legal advice to determine the recourse should CHIPS not operate as anticipated at the turn of the century*

- 5 Crown corporations (of 14 Crown corporations within the purview of the Crown Corporations Secretariat) had not sought legal advice and had no intentions of doing so:
  - B.C. Assessment Authority – advised that it has no mission-critical systems, and therefore legal advice was not sought regarding potential liabilities

- B.C. Ferry Corporation – advised that their focus has been on loss prevention, and that liability coverage is not problematic given that underwriters have indicated their satisfaction with the corporation's due diligence efforts
- B.C. Transportation Financing Authority (which is no longer a Crown corporation) – advised that there are no mission-critical systems within that organization, and therefore potential legal liabilities would not be assessed
- Columbia Power Corporation and Provincial Capital Commission – advised that, under the terms of their agreement with West Kootenay Power, legal liabilities as a result of failures of mission-critical systems rest with West Kootenay Power; as such, no legal liability assessments were conducted
- Provincial Capital Commission – advised that mission-critical systems do not exist in the commission, and therefore there were no plans to assess legal liabilities.
- 4 Crown corporations received advice regarding potential Y2K-related liabilities from in-house counsel or risk management staff (B.C. Buildings Corporation, B.C. Rail, B.C. Transit, I.C.B.C.);
- 5 Crown corporations received legal advice from external counsel (B.C. Hydro, B.C. Lottery Corporation, B.C. Pavilion Corporation, Pacific National Exhibition and RTP (Rapid Transit Project) 2000 Incorporated)

In response to inquiries by your committee, the Legal Services Branch of the Ministry of Attorney General has advised that the decision whether or not to seek legal advice regarding potential Y2K liabilities rests with Crown corporations.

As part of a more in-depth study of a sample of government organizations, the Auditor General also examined the Y2K project of the Public Service Employee Relations Commission ("PSERC") relating to the Corporate Human Resource Information and Payroll System. In his 1997 review, the Auditor General had recommended that legal advice should be sought to determine PSERC's legal exposure should the system fail to operate at the turn of the millennium, and the implications of PSERC's certification on CHIPS and its data. However, as of August 1999, PSERC's legal counsel had not reviewed the software and hardware vendors' Year 2000 certification to ensure PSERC's access to legal recourse in the event of Y2K failures, and so the Auditor General again recommended that legal advice be sought on these issues.

In early November, 1999, your committee was pleased to hear from the Chief Information Officer of the Province that, since the Auditor General's 1999 report was completed, PSERC has received the appropriate legal advice as recommended.

## **Ministries**

The Auditor General's 1999 review of Y2K preparedness examined whether sufficient information was available to evidence the fact that government had applied due diligence to correct Y2K problems.

Your committee notes that concerns were also expressed in the Auditor General's report about the failure of 2 ministries (the Ministry for Children and Families, and the Ministry of Health) to adequately consider potential legal liabilities arising from the Year 2000 computer problem. The report states that in July 1999, the Assistant Deputy Minister of the Action 2000 office advised all ministries to contact the Legal Services Branch of the Ministry of Attorney General for advice regarding the risks associated with relationships with parties providing goods and services to government, and with parties under contract to provide services on behalf of the government to third parties.

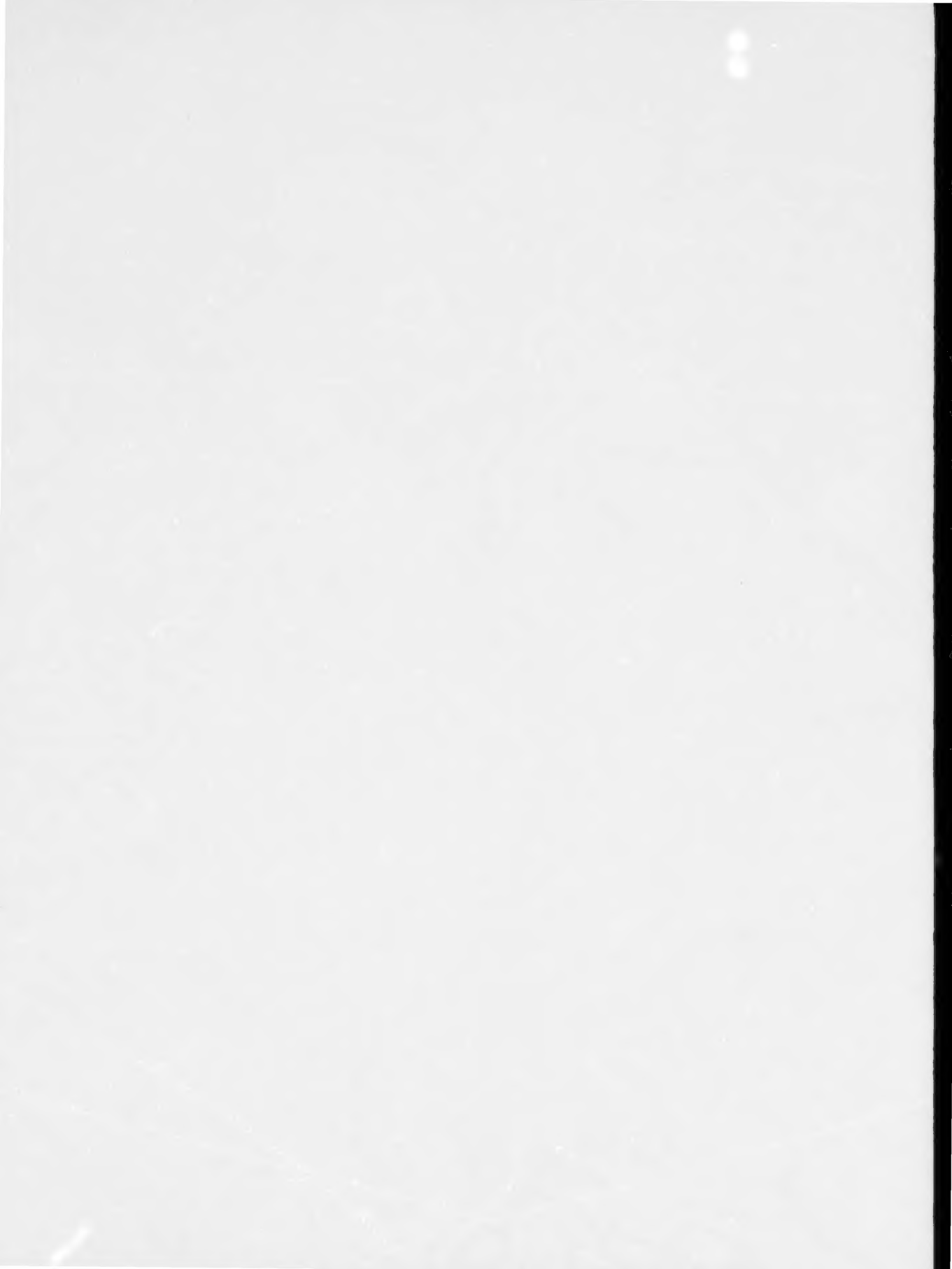
However, responses written by those 2 ministries and included in the Auditor General's report indicate that efforts were made to address the Auditor General's concerns. In particular, the Ministry for Children and Families made contact with all contracted agencies and ministry stakeholders regarding potential Y2K problems, and proceeded with a risk assessment for key contractors (including suppliers of medical equipment distributed to ministry clients) in order to determine vulnerabilities. In response to the Auditor General's concerns, the Ministry of Health worked with Ministry of Attorney General staff to determine potential liability in the case of failure of mission critical systems, and reviewed all agencies, boards and commissions which have a relationship with the ministry.

In November 1999 your committee was advised by representatives of ISTA that all ministries have reviewed both their own legal liabilities, as well as those of independent service-delivery contractors.

# Insurance Issues

In the private sector, the Insurance Bureau of Canada and the Insurance Council of Canada have been active in developing an educational campaign to inform businesses and homeowners that their insurance contracts cannot be expected to cover computer date recognition losses, as it is up to individual insurers to decide whether to exclude losses resulting directly from Y2K equipment failures. Optional model wordings were developed for standard Insurance Bureau of Canada commercial property and liability insurance policies, in order to clarify coverage limitations.

In terms of liability insurance coverage, some insurers have inserted Y2K exclusions into business insurance policies to exclude coverage for liabilities arising as a result of Y2K-related equipment failure. However, committee members were informed that the province of British Columbia is self-insured for general liability up to \$50 million per occurrence for personal injury and property damage to clients resulting from breakdowns and failures of computer systems. This coverage applies with respect to organizations in British Columbia's public sector and extended public sector, including Crown corporations, health authorities and post-secondary institutions (although Simon Fraser University, the University of British Columbia and the University of Victoria are all self-insuring). In addition, the province provides general liability coverage to approximately 6,000 contracted service providers delivering programs on behalf of the province, with a limit of \$2,000,000 per occurrence, subject to certain conditions. Moreover, public school systems in the province (kindergarten to Grade 12) are covered by the School Protection Program, and BCSTA lawyers have indicated that if school boards can show due diligence in attempting to reach Y2K compliance, liabilities resulting from Y2K-related failures will be covered by the program. However, your committee was made aware that private sector excess insurance or reinsurance arrangements have not been made by the province with regard to liability exceeding these amounts.



# Certification/Verification of Y2K-Readiness

The Auditor General's 1999 review also focused upon Y2K-readiness verification processes in place within the provincial government. Representatives of the Auditor General's office advised committee members that appropriate review, authorization and formal sign-off of Year 2000 project activities should include examination of the following:

- Development of user acceptance tests
- Conduct of comprehensive testing
- Steps taken to ensure that all applications interfacing with Y2K-ready systems are also Y2K-ready, and Y2K-ready systems have been successfully implemented into a Y2K-ready production environment
- Existence of management processes and contingency plans to ensure continuing readiness after verification

The Office of the Auditor General recommends that:

*The review and authorization of Year 2000 project activities and supporting documentation by a person or persons authorized to do so be evidenced with a formal sign-off as verification that the system is Year 2000 ready.*

In-depth reviews of a sample of mission-critical systems in ministries (Corporate Accounting System, Corporate Human Resource Information and Payroll System, Social Service Tax System, Harvest Database System, Medical Services Plan Claims System, and B.C. Benefits Program System), as well as Crown corporations and government organizations (B.C. Ferry Corporation, B.C. Hydro and Power Authority, B.C. Liquor Distribution Branch, Superannuation Commission and Workers' Compensation Board) indicated that formal sign-offs had taken place in those systems, or were scheduled to occur shortly after the Auditor General's review. However, the August 1999 survey done by the Auditor General revealed that formal sign-off was not taking place at an optimal level in all government systems. As such, the Auditor General recommended the review and authorization of Y2K activities and supporting documentation by management, and formal sign-off by management as verification of Y2K-readiness.

In response to the concerns identified by the Auditor General regarding review, verification and sign-off of Year 2000 project activities, representatives of ISTA advised your committee that a Y2K-preparedness checklist was distributed to all individuals at the executive management level of government in early October

**1999.** The checklist acted as an aid to managers in their review, verification and sign-off of Y2K projects.

# Y2K Project Costs

By the end of 1999, it was estimated that the federal government, led in its Y2K project by the Treasury Board Secretariat's Year 2000 Project Office, had spent \$2.5 billion and had employed approximately 11,000 people in its Year 2000 preparation efforts. It has also been estimated that all governments in Canada have spent approximately \$15 billion on Y2K projects. The Canadian military developed a contingency operation plan entitled "Operation ABACUS" that saw 14,500 regular force and 4,000 reserve force members on standby, at an estimated cost of \$386 million. Estimates of worldwide expenditures for Y2K projects by governments, companies and agencies have ranged from \$200 billion to \$500 billion (U.S.).

Committee members heard that expenditures for Y2K projects in the provincial government are being absorbed by existing ministry budgets, to ensure the accountability of deputy ministers for Y2K-readiness of systems in their respective ministries. As of early November 1999, it was estimated that the total direct cost of Y2K projects in British Columbia government ministries, Crown corporations and health authorities would be approximately \$240 million, broken down as follows:

- \$80 million for ministries, less than half of which is estimated to be for capital expenditures;
- \$60 million for Crown corporations - In this regard, your committee received information from the CCS indicating that the amount originally budgeted for Y2K was \$49 million over a three-year period, and that actual Y2K project costs for Crown corporations within the purview of the CCS totalled \$44,352,800 as of June 30, 1999.
- \$100 million in capital expenditures flowing from the Ministry of Health to health authorities.

However, representatives of the Auditor General's office noted that it is difficult to separate these costs from costs incurred by the government in the normal course of events in improving and developing its information technologies. On a similar note, the Chief Information Officer for the province pointed out that the funds spent on upgrading equipment and systems in preparation for the Year 2000 will have a positive effect upon essential service delivery in British Columbia which will last well beyond the turn of the millennium.

It was also emphasized to your committee that, due to the unpredictable nature of Y2K, the costs of addressing it have also been unpredictable. As such, cost containment measures were undertaken as follows:

- Assessment of potential legal liabilities arising from Y2K, in order to try to contain any future costs;
- A common technical testing platform developed by ISTA has been used by ministries, where feasible, to test major programs;
- Monitoring of Y2K management processes – Y2K was a standing agenda item at meetings of the Deputy Ministers' Committee on Emergency Preparedness, and deputy ministers were held accountable for ensuring Y2K compliance within their respective organizations. As well, some independent review of Y2K management processes, such as those of the Action 2000 office, took place.

## **RECOMMENDATION #2:**

Your committee recommends that the representatives of the Information, Science and Technology Agency, Crown Corporations Secretariat and the Ministry of Health re-attend before this committee no later than June 30, 2000 to provide information regarding the total direct cost of Y2K projects in ministries, Crown corporations and health authorities.

# Partnerships, Coordination Efforts and Communications Initiatives

Part of the challenge for the Action 2000 office has been to provide timely information to the public to ensure that there is a greater awareness of the extensive measures that have been taken to prepare the province for the turn of the millennium. Some British Columbians, concerned about widespread system failures, have exhibited their apprehension by hoarding food and money. This hoarding behaviour resulted in a decrease in food bank donations, and a run on items such as flashlights, battery-powered radios and bottled water.

Your committee received information regarding partnerships that were formed to encourage Y2K information-sharing and increase coordination of communication efforts, in order to address the apprehension felt by some British Columbians as the end of the millennium approached.

Within British Columbia, the provincial government took steps to encourage partnerships between itself and local governments, private sector essential service providers (especially utilities) and banking organizations. For example, initiatives were undertaken by the Provincial Emergency Program to encourage information-sharing between regional emergency preparedness managers and the provincial government. These initiatives included Y2K-preparedness workshops, and a "Vancouver Roundtable" which brought together 15 mainland municipalities, key industries and utilities. Your committee also notes that in early December 1999, the Provincial Emergency Program and the Action 2000 office held an Executive Information Seminar for mayors, regional district chairs and senior appointed officers, on regional Y2K transition plans. That meeting included presentations from Emergency Preparedness Canada, Canadian Forces B.C. Domestic Operations, the Provincial Emergency Program, RCMP, Ministry of Health, Action 2000, Vancouver International Airport Authority, Greater Vancouver Transit Authority, B.C. Hydro, Telus, B.C. Gas, the E-Comm Centre (the new emergency communications centre in Vancouver), and the Regional Districts of Greater Vancouver, Fraser Valley, Squamish Lillooet and Sunshine Coast.

High-level emergency preparedness coordination also occurred between the Action 2000 office, provincial government ministries, regional and community emergency coordinators, and federal agencies such as the RCMP and the Department of

National Defence. This initiative was led by the Provincial Emergency Program. As well, on September 21, 1999 Action 2000 held an information-exchange and communications strategy forum. The forum was attended by representatives of 22 private and public sector "essential services" organizations, including the Provincial Emergency Program, B.C. Hydro, I.C.B.C., Telus, B.C. Gas, Vancouver Airport, Port of Vancouver. Representatives of police services and food, banking, financial and insurance industries were also in attendance. One of the results of that forum was the release of a publication detailing the Y2K-readiness status of British Columbia essential service providers.

Many partnerships and coordination efforts also took place at the inter-provincial, federal and international levels. For example, committee members were advised that a national chief information officers forum was created to discuss management of Y2K issues across Canada. Representatives of health ministries from across the country worked together during the 2 years leading up to the new millennium, sharing best practices, common databases and other information.

Your committee was also interested to hear that international round tables were held to collect and communicate up-to-date information regarding management and monitoring of Y2K around the world. As well, in February 1999 an International Y2K Cooperation Centre was established by the United Nations Working Group on Informatics, with World Bank funding. The purpose of the centre has been to coordinate efforts to update computer and automated control systems around the world, in order to ensure a smooth transition to the year 2000. A group of national Year 2000 coordinators serves as the centre's steering committee.

Committee members were further advised that the British Columbia government has been a leader in the communication of Y2K issues to the public, through the use of its Internet web site, Y2K publications (including a publication entitled "RU Y2K OK BC?", which as of early November 1999 had a circulation of 30,000), posters, a toll-free phone line, public workshops in communities throughout British Columbia (which included the participation of local governments, utilities, and in some cases health authorities) and internal communications. The Action 2000 office also issued a readiness report in October, 1999 entitled "Millennium Strategies for B.C.". That report discussed the progress made in provincial government Y2K-preparedness, and concluded that major disruptions were not expected.

# Other Issues

## Private Sector Readiness

Although the focus of your committee's work was Y2K-readiness within provincial government ministries, Crown corporations, and other government organizations, your committee does note that significant efforts have also been made to assess readiness in the private sector. As early as 1997, federal Industry Minister John Manley appointed prominent members of the Canadian business community to a "Task Force Year 2000" (otherwise known as the "Monty Task Force", as the task force was chaired by Jean C. Monty, President and Chief Operation Officer of BCE Inc.). The mandate of the Task Force was to assess the nature and scope of the electronic challenge in Canada, the state of industry preparedness to deal with issues related to Year 2000 computer risks, and to provide leadership and advice on how these risks could be reduced. The Task Force released its report in February 1998, making 18 recommendations to prepare Canadian business and industry for the Year 2000. It is interesting to note that one of these recommendations states that the House of Commons Standing Committee on Public Accounts should continue to scrutinize the evolution of the state of preparedness of federal government systems, and that provincial legislative bodies should initiate similar transparent processes through which provincial institutions would report regularly on progress achieved.

A federal Department of Foreign Affairs and International Trade survey, the results of which were released in the fall of 1999, indicated that the Y2K-preparedness of the financial services sector in most countries has been excellent. During the course of its deliberations, your committee was informed that banks operating in British Columbia conducted comprehensive reviews and were able, for the most part, to guarantee to clients that their funds and records would be secure. Your committee notes that the Canadian Bankers' Association spent approximately \$1 billion testing computer systems to ensure continuation of services. However, despite the assurances of banks and credit unions, it was still recommended that clients treat the millennial change period like a long weekend, and ensure they withdraw appropriate funds in advance of that period of time. In fact, the Bank of Canada stockpiled approximately \$23 billion worth of paper currency across the country, in addition to the \$35 billion usually in circulation at this time of the year, in anticipation of mass withdrawal of funds. However, Canadians actually withdrew only about \$1 billion more than usual for the transition from 1999 to 2000.

## **British Columbia's International Trade Relationships**

Your committee notes that 1998 world trade totalled over \$5 trillion. The global trading system is made up of a complex network of suppliers, distributors, service providers and customers. In turn, international trade relationships are highly dependent upon uninterrupted delivery of transportation, energy, banking, insurance, telecommunications and government services. If Y2K-related failures disrupt any of these services, the entire global trading system is affected.

Your committee was advised that a survey conducted by the federal Department of Foreign Affairs and International Trade in the summer/fall of 1999 revealed that approximately \$1 billion of British Columbia's exports were headed to markets which are at a high risk of Y2K failure, particularly in the areas of ports and shipping, telecommunications, financial services and transportation. In particular, China, Pakistan, Russia (particularly Ukraine) and the Czech Republic were identified as lagging behind other nations in Y2K preparation efforts. There have been concerns that such failures occurring internationally could have a "ripple effect" on British Columbia's economy.

As is apparent now, the millennial change did not produce any immediate significant disruptions. However, the threat of Y2K-related failures still looms, and therefore it is premature to draw any conclusions at this time about the impact of Y2K-related failures on British Columbia's international trading relationships.

# Conclusion

Fortunately, the only reported Y2K problem that occurred in Canada at the turn of the millennium was related to a computerized ambulance system in Ontario, and the problem was quickly rectified. Likewise, the turn of the millennium did not bring any interruptions to mission-critical systems in British Columbia, and your committee is of the view that this is in large part due to the tireless efforts of those responsible for Y2K-preparedness in the province. However, it is too early to determine the long-term success of the Y2K-preparedness project in British Columbia. Your committee notes that a smooth transition to the New Year does not provide any guarantee that there will not be Y2K-related failures in the future. For example, researchers with the Gartner Group estimate that about half of Y2K failures could actually occur at various times throughout 2000 and 2001, particularly from mid-January onward. As well, your committee notes that the "Year 2038" bug has been identified, with the potential to affect machines that run the Unix operating system. Apparently, it is anticipated that Unix-based computers will run out of space to store the number of seconds elapsed since January 1, 1970 (when the operating system was invented) at 3:14:07 a.m. on January 19, 2038.

It is clear, though, that planning for the Year 2000 has left a legacy of emergency planning procedures which will benefit the province for years to come, regardless of what type of emergency may arise.



# Appendices

## I - LIST OF RECOMMENDATIONS MADE BY THE AUDITOR GENERAL

### Recommendations to Ministries

The Office of the Auditor General recommends that:

- ◆ Final business continuation plans be signed off by authorized management and the plan coordinator as evidence that the plans have been reviewed and authorized and are considered to be thorough, reasonable and capable of implementation
- ◆ One of the priorities of government should be to promote the completion and testing of business continuation plans within the set deadlines, as insurance against disruptions to service delivery and operations
- ◆ The review and authorization of Year 2000 project activities and supporting documentation by a person or persons authorized to do so be evidenced with a formal sign-off as verification that the system is Year 2000 ready

### Recommendations Regarding Specific Systems

1. Public Service Employee Relations Commission - Corporate Human Resource Information Payroll System (CHIPS):

The Office of the Auditor General recommends that:

- ◆ The Public Service Employee Relations Commission seek legal advice to determine recourse should CHIPS not operate as anticipated at the turn of the century

2. Ministry of Forests - Harvest Database System

The Office of the Auditor General recommends that:

- ◆ The final business continuation plan be signed off by authorized management and the plan coordinator as evidence that the plan has been reviewed and authorized and is considered to be thorough, reasonable and capable of implementation

- ♦ If the library management system cannot be Year 2000 ready in time, management consider other options for code movement and tracking

3. Recommendations Regarding Health Authorities

The Office of the Auditor General recommends that:

- ♦ The Ministry of Health immediately appoint Year 2000 managers and adequate resources to assist the several remaining high-risk health authorities with becoming Year 2000 ready, developing business continuation plans and ensuring that their supply chain will be Year 2000 ready.

## **II – LIST OF RECOMMENDATIONS MADE BY THE COMMITTEE**

### **RECOMMENDATION #1**

Your committee recommends that the government continue to promote the completion, testing and ongoing improvement of all-hazards business continuation plans in ministries, Crown corporations and government organizations, including health authorities, advanced education institutions, school districts and municipalities, to insure against future disruptions to service delivery and operations.

### **RECOMMENDATION #2:**

Your committee recommends that the representatives of the Information, Science and Technology Agency, Crown Corporations Secretariat and the Ministry of Health re-attend before this committee no later than June 30, 2000 to provide information regarding the total direct cost of Y2K projects in ministries, Crown corporations and health authorities.



### **III – SUBMISSIONS**

1. Stuart Culbertson, Deputy Minister and Chief Information Officer, Information, Science and Technology Agency – “Y2K Presentation to Public Accounts Committee”, March 25, 1999
2. Stuart Culbertson, Deputy Minister and Chief Information Officer, Information, Science and Technology Agency – “Y2K Presentation to Public Accounts Committee”, July 13, 1999
3. Stuart Culbertson, Deputy Minister and Chief Information Officer, Information, Science and Technology Agency – “Y2K Presentation to Select Standing Committee on Public Accounts”, November 3, 1999
4. Stuart Culbertson, Deputy Minister and Chief Information Officer, Information, Science and Technology Agency - Correspondence dated July 28, 1999 and January 20, 2000



## IV – RESEARCH DOCUMENTS

### BRITISH COLUMBIA

- Information, Science and Technology Agency and the Ministry of Small Business, Tourism and Culture, "RU Y2K OK BC: You, Your Business and the Year 2000 Problem", undated
- Information, Science and Technology Agency, Action 2000 Office, "Mission-Critical Projects of Government Ministries by Ministry", February 15, 1999
- Information, Science and Technology Agency, "Y2K Action Plan", February 1999
- Information, Science and Technology Agency, News Release, "Essential B.C. Services on Track to be Y2K-Ready", February 19, 1999
- Information, Science and Technology Agency, Action 2000 Office, "B.C. Government's Y2K Action Plan Backgrounder", undated
- Information, Science and Technology Agency, Action 2000 Office, "Y2K Community Visits", undated
- Information, Science and Technology Agency, Action 2000 Office, "Monthly Report of the Action 2000 Office – Summary of Year 2000 Projects by Stage", June 1999
- Information, Science and Technology Agency, Action 2000 Office, "Mission-Critical Projects of Crown Corporations by Corporation", June 15, 1999
- Information, Science and Technology Agency, Action 2000 Office, "Mission-Critical Projects of Government Ministries by Ministry", June 15, 1999
- Information, Science and Technology Agency, News Release, "Mission-Critical Computer Systems Y2K Ready", October 28, 1999 (also a submission – submitted by ISTA at meeting)
- Information, Science and Technology Agency, "Province of British Columbia Y2K Readiness Report", October 1999 (also a submission – submitted by ISTA at meeting)
- Deloitte & Touche, Enterprise Risk Services, "British Columbia Ferry Corporation Independent Year 2000 Assessment", September 1999
- "Y2K Objectives Met by B.C. Government", [www.action2000.gov.bc.ca](http://www.action2000.gov.bc.ca)
- "Year 2000 test has all computerized BC Hydro generating plants operating in Year 2000", [www.bchydro.bc.ca/html/news\\_releases/1999/nov/nov99-02b.htm](http://www.bchydro.bc.ca/html/news_releases/1999/nov/nov99-02b.htm)

- "Managing the Impact of the Year 2000 Challenge", [www.bcferries.bc.ca/corporate/y2k/problem.htm](http://www.bcferries.bc.ca/corporate/y2k/problem.htm)
- "Stocking up for Y2K", Randene Neill and Oliver Lum, BCTV News, December 9, 1999
- Information, Science and Technology Agency, "Countdown: A B.C. Government Y2K Update", August 1999
- "Health region confident of Y2K readiness", Times-Colonist, October 29, 1999, p. D1
- British Columbia Ministry of Attorney General, Legal Services Branch, *Legal Briefs and Lawful Shorts*, March 1999, vol. 4, issue 1, "Legal Issues and the 'Millennium Bug'", Anita Petkovic
- "Telus – Ready for the Year 2000?", [www.bctel.com/about/newscentre/y2kready.htm](http://www.bctel.com/about/newscentre/y2kready.htm)
- "Westcoast works to be well prepared for Y2K", [www.westcoastenergy.com/y2k](http://www.westcoastenergy.com/y2k)
- "West Kootenay Power and Year 2000 compliance – a strategic approach", [www.wkpower.com/customerservice/y2k.htm](http://www.wkpower.com/customerservice/y2k.htm)
- "Natural Gas Industry Successfully Tests Communications for Y2K Readiness", [www.cga.ca/PressRelease/y2ktest.html](http://www.cga.ca/PressRelease/y2ktest.html)
- "August 9, 1999 – North American Electric Reliability Council Recognizes BC Hydro Year 2000 Ready", [www.bchydro.bc.ca/html/news\\_releases/1999/aug/aug99-9a.html](http://www.bchydro.bc.ca/html/news_releases/1999/aug/aug99-9a.html)
- "Complete List of Health Authorities (Status of Mission Critical Systems)", [www.hlth.gov.bc.ca/year2000/updates/index.html](http://www.hlth.gov.bc.ca/year2000/updates/index.html)
- "Emergency centre stays alert despite lack of Y2K woes", Eric Beauchesne, *Vancouver Sun*, January 3, 2000, p. A1
- "Military prepared to battle any Y2K computer crisis", Bill Cleverley, *Times-Colonist*, December 16, 1999, p. F4
- "Hospitals ready for any situation when Year 2000 arrives", Scott Simpson, *Vancouver Sun*, December 8, 1999, p. B1
- "You're on your own: Insurers", Damian Inwood, *The Province*, July 7, 1999, p. A11
- "Y2K exemption sought by councils", Tom Barrett, *Vancouver Sun*, March 26, 1999, p. A5

- "Canada's banks lead way in Y2K controls", Tom Barrett, *Vancouver Sun*, March 20, 1999, p. A1
- "Log on to legal considerations", *Education Leader*, February 18, 1999, p. 7
- "No doom, little gloom", Shane McCune, *The Province*, January 3, 2000, p. A6
- "Officials geared up for Y2K problems", Jeff Bell, *Times-Colonist*, December 16, 1999, p. A5
- "Y2K in B.C.", Shane McCune, Sarah Papple and Wendy McLellan, *The Province*, December 12, 1999, p. A29

## CANADA

- The Canadian Bar Association, *Countdown to Year 2000: The Legal Issues*, Ottawa: The Canadian Bar Association, May 1998
- "Year 2000: Insurance Industry Challenge and Response" (notes for remarks by George Anderson, President, Insurance Council of Canada, to the Insurance Institute of Ontario, Toronto, April 28, 1998), [www.ibc.ca/English/safety/Y2K-Challenge.html](http://www.ibc.ca/English/safety/Y2K-Challenge.html)
- Government of Canada, Department of National Defence, National Contingency Planning Group, "Canada's Essential Services: Year 2000 Readiness – Latest Findings", December 6, 1999, [www.ncpg.gc.ca/fnds1\\_e.htm](http://www.ncpg.gc.ca/fnds1_e.htm)
- Government of Canada, Department of National Defence, National Contingency Planning Group, "Speaking Notes for Paul Thibault, Federal Coordinator for Year 2000 Contingency Planning, Media Information Session, Ottawa, November 24, 1999", [www.ncpg.gc.ca/spch1\\_e.html](http://www.ncpg.gc.ca/spch1_e.html)
- Government of Canada, Department of National Defence, National Contingency Planning Group, "Canada's Critical Infrastructure: State of Year 2000 Readiness", December 6, 1999, [www.ncpg.gc.ca/precisy2r\\_e.html](http://www.ncpg.gc.ca/precisy2r_e.html)
- Government of Canada, Department of National Defence, National Contingency Planning Group, "Canada Year 2000 Monitoring and Coordination Centre", November 24, 1999, [www.ncpg.gc.ca/nsre2\\_2.html](http://www.ncpg.gc.ca/nsre2_2.html)
- Treasury Board of Canada Secretariat, "Y2K Monitoring and Coordination Centre Ceases Operations", January 6, 2000, [www.info2000.gc.ca](http://www.info2000.gc.ca)
- Task Force Year 2000, "A Call for Action: Report of Task Force Year 2000", February 1998: Minister of Public Works and Government Services Canada

- Task Force Year 2000, "A Call for Action: The Eleventh Hour, Final Update of Task Force Year 2000", July 1998: Minister of Public Works and Government Services Canada
- Department of Foreign Affairs and International Trade, "DFAIT Global Sectoral Statement on Banking", [www.dfait-maeci.gc.ca/y2k/banking\\_sector-e.html](http://www.dfait-maeci.gc.ca/y2k/banking_sector-e.html)
- Department of Foreign Affairs and International Trade, "DFAIT Global Sectoral Statement on Customs", [www.dfait-maeci.gc.ca/y2k/banking\\_sector-e.html](http://www.dfait-maeci.gc.ca/y2k/banking_sector-e.html)
- Department of Foreign Affairs and International Trade, "DFAIT Global Sectoral Statement on International Ports", [www.dfait-maeci.gc.ca/y2k/ports\\_sector-e.html](http://www.dfait-maeci.gc.ca/y2k/ports_sector-e.html)
- Department of Foreign Affairs and International Trade, "DFAIT Global Sectoral Statement on Telecommunications", [www.dfait-maeci.gc.ca/y2k/telecom\\_sector-e.html](http://www.dfait-maeci.gc.ca/y2k/telecom_sector-e.html)
- Department of Foreign Affairs and International Trade, Country Readiness Statements, [www.dfait-maeci.gc.ca/Y2K/travel](http://www.dfait-maeci.gc.ca/Y2K/travel)
- Canadian Year 2000 National Clearinghouse for Health, [www.cynch.org](http://www.cynch.org)
- Bank of Canada, "Preparations by the Canadian Financial Sector for the Year 2000", [www.bank-banque-canada.ca/english/y2000\\_prep.html](http://www.bank-banque-canada.ca/english/y2000_prep.html)
- Canadian Bankers Association, [www.y2k.cba.ca](http://www.y2k.cba.ca)
- Health Canada, "TPP-Web: Medical Devices: Y2K Database", [www.hc-sc.gc.ca/hpb-dgps/therapeut/htmleng/y2k\\_db.html](http://www.hc-sc.gc.ca/hpb-dgps/therapeut/htmleng/y2k_db.html)

## UNITED STATES

- North American Electric Reliability Council, "Preparing the Electric Power Systems of North America for Transition to the Year 2000: A Status Report Update, Third Quarter, 1999", November 18, 1999: North American Electric Reliability Council
- Testimony of Jacquelyn L. Williams-Bridgers, Inspector General of the Department of State, Arms Control and Disarmament Agency, and United States Information Agency, before the Special Committee on the Year 2000 Technology Problem, United States Senate, July 22, 1999
- Kathy Koch, "Y2K Dilemma", *CQ Researcher*, Congressional Quarterly, Vol. 9, No. 7, February 19, 1998, p. 139

- United States General Accounting Office, Report to the Majority Leader, House of Representatives, "Year 2000 Computing Crisis: Costs and Planned Use of Emergency Funds", April 1999
- United States Information Agency, "Clinton Signs Y2K Legislation into Law", July 21, 1999, [www.usia.gov/topical/global/y2k/99072100.html](http://www.usia.gov/topical/global/y2k/99072100.html)
- Gregory S. Johnson, Washington State Bar Association, "When the Clock Strikes 2000: Practical and Legal Y2K Issues", [www.wsba.org/barnews/archives98/y2k.html](http://www.wsba.org/barnews/archives98/y2k.html)
- Information Technology Association of America, "Y2K Legislation", [www.itaa.org/year2000.legis.html](http://www.itaa.org/year2000.legis.html)
- United States Senate Special Committee on the Year 2000 Technology Problem, "Investigating the Year 2000 Problem: The 100 Day Report", September 22, 1999: Government Printing Office
- United States General Accounting Office, Testimony before the Subcommittee on Government Management, Information and Technology, Committee on Government Reform, and the Subcommittee on Technology, Committee on Science, House of Representatives, "Year 2000 Computing Challenge: Federal Business Continuity and Contingency Plans and Day One Strategies", Statement of Joel C. Willemsen, Director, Civil Agencies Information Systems, Accounting and Information Management Division, October 29, 1999

## INTERNATIONAL

- "International Y2K Cooperation Centre Fact Sheet", February 5, 1999, [www.worldbank.org.infodev/y2k/iy2kcc.html](http://www.worldbank.org.infodev/y2k/iy2kcc.html)
- Auditor General of Tasmania, Special Report No. 30, "Year 2000: Coming Ready or Not", Government Printer of Tasmania: September 1999
- *The Economist*, "Emerging Market Indicators", August 21, 1999, p. 90
- Parliament of Victoria, Public Accounts and Estimates Committee, 26<sup>th</sup> Report to Parliament, "Information Technology and the Year 2000 Problem – Is the Victorian Public Sector Ready?", Victorian Government Printer, November 1998